Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
For
White Oak School

What is SWAP?

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to:

? Inventory land uses within the recharge areas of all public water supply sources;

? Assess the susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared:
November 25, 2003

Table 1: Public Water System (PWS) Information

PWS Name	White Oak School
PWS Address	40 Albany Road
City/Town	Westfield, Massachusetts
PWS ID Number	1329004
Local Contact	Mr. David Drake
Phone Number	(413) 562-9500

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1329004-01G	177	472	Low

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

White Oak School is a private elementary school, serving students with special needs, located in Westfield, a medium sized City in western Massachusetts. There is municipal water and wastewater disposal available in Westfield, however only wastewater disposal is available to the White Oak School. A single well serves the school. The well was installed and tested under the requirements of the DEP New Source Approval Process in 1997.

Well #1 is a 6-inch diameter 411 feet deep, bedrock well that is located in the schoolyard, approximately 450 feet south of the school. Geologic mapping in the area indicates thin

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

till cover over bedrock. The bedrock is mapped as sandstones of the Mesozoic Basin. Well logs reports confirm bedrock was encountered at 35 feet below grade and the bedrock encountered was sandstone. Water quality during development indicated dissolved inorganic compounds, in the water. Sodium, chloride and fluoride were reported at concentration near or above the guideline or secondary standard for those constituents. There are no enforceable standards for these constituents. The school monitors the levels and reports the current concentrations as required. For current information on monitoring result

The Zone I is the protected area immediately surrounding the well, while the Interim Wellhead Protection Area (IWPA) provides an interim protection area for a water supply well when the actual (Zone II) recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The Zone I and Interim Wellhead Protection Area (IWPA) radii for this facility's well are 177 feet and 472 feet, respectively, based on an approved withdrawal rate of 3,240 gpm. There is no evidence of a hydrogeologic barrier (till or clay layer) to impede the downward migration of contaminants from land uses at the ground surface, therefore the aquifer is considered to have a high vulnerability to contamination. Please refer to the attached map of the Zone I and IWPA.

The well serving the facility has no treatment at this time. The DEP requires public water suppliers to frequently monitor the quality of the water. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1. Drinking water monitoring reporting data is also available at http://www.epa.gov/enviro/html/sdwis/sdwis_query.html, the EPA's Envirofacts website.

2. Discussion of Land Uses in the Protection Areas

There are few uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Passive recreational activity**

The overall ranking of susceptibility to contamination for the well is low, based on the presence of only one low threat land use or activity in the Zone I and IWPA, as seen in Table 2. However, the DEP notes that there is inconclusive information regarding the source of the high sodium and chloride in the school well water with respect to whether or not the elevated levels are natural or due to anthropogenic activities. Shallow bedrock makes the bedrock aquifer vulnerable to activities on the surface. In addition, since the actual recharge area for the well has not been determined, the IWPA is only a guide for reviewing activities that may pose a potential threat to the water quality.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Passive recreation	Yes	Yes	Low	Continue current practice of not using pesticides and fertilizers. Inspect the wellhead regularly to ensure the integrity of the cap and seal and that there is no pooling of water.

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

There may be activities outside of the IWPA that pose a threat to the water supply. An example may be the salvage/storage yard south of the school or nearby manufacturing facilities. However, there is presently little information to determine the actual recharge area for the well or that any of these facilities may impact the well.

1. **Passive recreational activity –** Passive recreation is the only activity within the protection areas. Potential threats from this activity is related to access and pesticide and fertilizer use.

Recommendations:

- Continue current practice of not using fertilizers and pesticides.
- Inspect the well casing regularly to ensure the integrity of the seal and cap and to ensure there is no ponding of water near the well.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. White Oak School is commended for efforts to utilize municipal wastewater disposal and development of a deep well away from activities. We recommend continued monitoring of the water quality and assessment of appropriate treatment if it becomes necessary to reduce the levels of inorganic constituents in the water. The facility should continue efforts in water supply protection through reviewing and adopting the key recommendations above and the following:

Zone I:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Restrict use of salt within Zone I and drain stormwater away from well.
- ✓ Conduct regular inspections of the Zone I.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.

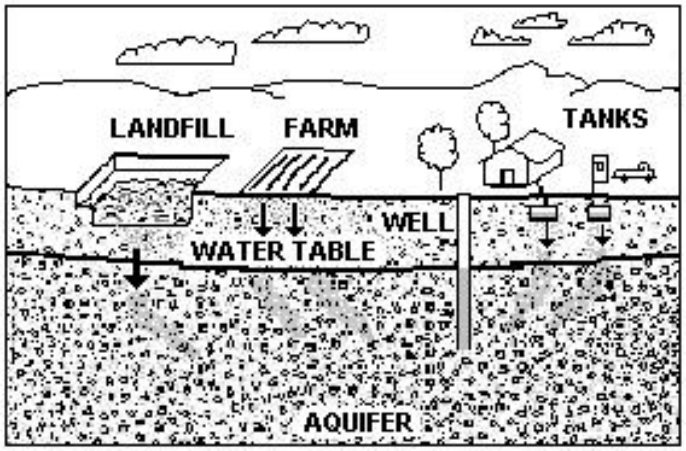

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Training and Education:

- ✓ Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, and certified operator. Post labels as appropriate on raw materials and hazardous waste.

Facilities Management:

- ✓ Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility properties.

Planning:

- ✓ Work with local officials in town to include the facility's IWPA in Aquifer Protection District Bylaws if the town establishes such bylaws in the future.
- ✓ Have a plan to address short-term water shortages and

For More Information:

Contact Catherine Skiba in DEP's Springfield Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier and city boards.

long-term water demands. Keep the phone number of a bottled water company readily available.

- ✓ Work with your community to ensure that stormwater runoff is directed away from the well and the facility and treated according to DEP guidance.
- ✓ Review water quality at the school regularly to determine if treated is required.
- ✓ Continue to monitor activities near the school that may impact the water quality.

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Each program year, if funds area available, the Department posts a new Request for Response for the Grant program (RFR). Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation". Documents are available at the DEP website: http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to encourage discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Areas
- Recommended Source Protection Measures Fact Sheet